



New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **LEAD SULFIDE**

CAS Number: 1314-87-0

DOT Number: None

DOT Hazard Class: None

RTK Substance number: 1113

Date: May 1998

Revision: August 2005

HAZARD SUMMARY

- * **Lead Sulfide** can affect you when breathed in.
- * **Lead Sulfide** can cause headache, irritability, reduced memory and disturbed sleep.
- * Repeated exposure to **Lead Sulfide** can cause *Lead* poisoning. Symptoms include metallic taste, poor appetite, weight loss, colic, upset stomach, nausea and vomiting, and muscle cramps.
- * Higher levels can cause muscle and joint pains, weakness and fatigue.
- * High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- * *Lead* exposure increases the risk of high blood pressure.
- * **Lead Sulfide** may cause kidney and brain damage, and damage to blood cells causing anemia.

IDENTIFICATION

Lead Sulfide is a silvery, metallic, crystalline (sand-like) material or a black powder. It is used in ceramic glazes, infrared radiation detectors, and semiconductors.

REASON FOR CITATION

- * **Lead Sulfide** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, NIOSH, NTP, DEP, IRIS and EPA.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

The following exposure limits are recommended for *inorganic Lead dusts and fumes* (measured as *Lead*):

OSHA: The legal airborne permissible exposure limit (PEL) is **0.05 mg/m³** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit is **0.1 mg/m³** averaged over a 10-hour workshift.

ACGIH: The recommended airborne exposure limit is **0.05 mg/m³** averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **Lead Sulfide** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Lead Sulfide** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Lead Sulfide**:

- * **Lead Sulfide** can cause headache, irritability, reduced memory and disturbed sleep.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Lead Sulfide** and can last for months or years:

Cancer Hazard

- * While **Lead Sulfide** has not been identified as a carcinogen, *Lead* and certain *Lead compounds* have been determined to be human carcinogens. **Lead Sulfide** should be handled with extreme caution.

Reproductive Hazard

- * While **Lead Sulfide** has not been identified as a teratogen or a reproductive hazard, *Lead* and certain *Lead compounds* have been determined to be teratogens and may also cause reproductive damage, such as reduced fertility and interference with menstrual cycles. **Lead Sulfide** should be handled with extreme caution.

Other Long-Term Effects

- * Repeated exposure to **Lead Sulfide** can cause *Lead* poisoning. Symptoms include metallic taste, poor appetite, weight loss, colic, upset stomach, nausea and vomiting, and muscle cramps.
- * Higher levels can cause muscle and joint pains, weakness and fatigue.
- * High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- * *Lead* exposure increases the risk of high blood pressure.
- * **Lead Sulfide** may cause kidney and brain damage, and damage to blood cells causing anemia.
- * Repeated exposure causes *Lead* to accumulate in the body. It can take years for the body to get rid of excess *Lead*.

MEDICAL

Medical Testing

Before first exposure, and every six (6) months thereafter, OSHA requires your employer to provide (for persons exposed to **30 micrograms** or more of *Lead per cubic meter* of air):

- * Blood *Lead* test.

- * ZPP (a special test for effects of *Lead* on blood cells).

For employees with blood *Lead* levels above **40 micrograms per 100 grams** of whole blood (**40 micrograms per deciliter**), OSHA requires blood *Lead* level monitoring every two months until two consecutive blood *Lead* levels are below **40 micrograms per 100 grams** of whole blood. These employees must undergo a medical evaluation, which should include:

- * Complete work and medical history.
- * Thorough physical examination, including examination of central nervous system.
- * Blood *Lead* test.
- * ZPP (a special test for effects of *Lead* on blood cells).
- * Hemoglobin, hematocrit with complete blood count.
- * Urinalysis with microscopic examination.
- * Any other tests determined as deemed necessary by the examining physician.

This evaluation should be performed at least on an annual basis.

OSHA requires your employer to provide you and your doctor with a copy of the OSHA *Lead* Standard: 29 CFR 1910.1025 and 1926.62.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

Mixed Exposures

- * Body exposures to *Lead* from hobbies using *Lead* solder or pigments, target practice, and drinking moonshine made in *Leaded* containers will increase *Lead* levels. Repeated breathing or handling of *Leaded* gasoline may also add to body *Lead* levels.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- * Where possible, automatically transfer **Lead Sulfide** from drums or other storage containers to process containers.
- * Specific engineering controls are required for this chemical by OSHA. Refer to the OSHA Standards: 29 CFR 1910.1025 and 1926.62 for *Lead*.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **Lead Sulfide** should change into clean clothing promptly.
- * Do not take contaminated work clothes home. Family members could be exposed.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Lead Sulfide**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **Lead Sulfide**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Lead Sulfide**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **Lead Sulfide** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.
- * Use a HEPA vacuum or a wet method to reduce dust during clean-up. **DO NOT DRY SWEEP**.
- * Work surfaces should be cleaned thoroughly on a routine basis.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **Lead Sulfide**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * Safety equipment manufacturers recommend *Spunbonded Olefin* as a protective material for *Lead*.

- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- * Wear eye protection with side shields or goggles.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

The following respiratory protection guidelines are based on exposure to *Lead*:

- * Where the potential exists for exposure not higher than **0.5 mg/m³**, use a half-mask, air purifying respirator equipped with high efficiency filters.
- * Where the potential exists for exposure not higher than **2.5 mg/m³**, use a full facepiece, air purifying respirator with high efficiency filters.
- * Where the potential exists for exposure not higher than **50 mg/m³**, use any powered-air purifying respirator with high efficiency filters or a half-mask supplied-air respirator operated in a positive pressure mode.
- * If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Lead Sulfide**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- * Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters, cartridges, or canisters to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- * Where the potential exists for exposure greater than **50 mg/m³** but less than **100 mg/m³**, use supplied-air respirators with full facepiece, hood, helmet or suit, operated in a positive pressure mode.
- * Where the potential exists for exposure greater than **100 mg/m³**, use full facepiece, self-contained breathing apparatus operated in a positive pressure mode.
- * Exposure to **100 mg/m³** is immediately dangerous to life and health. If the possibility of exposure above **100 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

QUESTIONS AND ANSWERS

- Q: If I have acute health effects, will I later get chronic health effects?
- A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.
- Q: Can I get long-term effects without ever having short-term effects?
- A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.
- Q: What are my chances of getting sick when I have been exposed to chemicals?
- A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.
- Q: When are higher exposures more likely?
- A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).
- Q: Is the risk of getting sick higher for workers than for community residents?
- A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: <http://www.state.nj.us/health/eoh/odisweb/>

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Common Name: **LEAD SULFIDE**
 DOT Number: **None**
 DOT Hazard Class: **None**
 NAERG Code: **No Citation**
 CAS Number: **1314-87-0**

| | | |
|--------------------------------------|-----------|-----------|
| Hazard rating | NJDHSS | NFPA |
| FLAMMABILITY | 0 | Not Rated |
| REACTIVITY | Not Found | Not Rated |
| POISONOUS GASES ARE PRODUCED IN FIRE | | |

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

- * Extinguish fire using an agent suitable for type of surrounding fire. **Lead Sulfide** itself does not burn.
- * POISONOUS GASES ARE PRODUCED IN FIRE, including *Lead Oxides* and *Sulfur Oxides*.
- * If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If **Lead Sulfide** is spilled, take the following steps:

- * Evacuate persons not wearing protective equipment from area of spill until clean-up is complete.
- * Collect powdered material in the most convenient and safe manner and deposit in sealed containers.
- * Ventilate and wash area after clean-up is complete.
- * It may be necessary to contain and dispose of **Lead Sulfide** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
- * If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE

- * Prior to working with **Lead Sulfide** you should be trained on its proper handling and storage.
- * **Lead Sulfide** may react violently with HYDROGEN PEROXIDE and IODINE MONOCHLORIDE.
- * **Lead Sulfide** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and CHEMICALLY ACTIVE METALS (such as POTASSIUM, SODIUM, MAGNESIUM and ZINC).
- * Store in tightly closed containers in a cool, well-ventilated area.

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact

- * Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact

- * Remove contaminated clothing. Wash contaminated skin with soap and water.

Breathing

- * Remove the person from exposure.
- * Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- * Transfer promptly to a medical facility.

PHYSICAL DATA

Vapor Pressure: 1 mm Hg at 1,565°F (851.5°C)

Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

Chemical Name:

Lead (2+) Sulfide (1:1)

Other Names:

Galena; Natural Lead Sulfide; Plumbous Sulfide

Not intended to be copied and sold for commercial purposes.

NEW JERSEY DEPARTMENT OF HEALTH AND
SENIOR SERVICES

Right to Know Program

PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202